

ARS-09

MHD Angular Rate Sensor



The ARS-09 is a versatile angular rate sensor which offers an economical price while meeting the shock and acceleration limits required in most general motion testing methods. It exhibits a high sensitivity with low to moderate angular range. Originally designed for automobile suspension analysis and machinery monitoring applications, the ARS-09 is small enough to be mounted in compact spaces and has an integral cable assembly.

The standard frequency response of MHD sensors can be extended significantly by the use of digital filtering in post processing of signal data as covered in ATA Sensors' application note AN-01. Typical digitally processed frequency responses allow use of the sensors to measure to frequencies below 0.1 Hz. A sample MATLAB program is available without charge.

Power supply voltages of ± 5 to ± 15 Vdc are required. With our optional ILC units, single voltage input and/or acceleration or amplified outputs are available options. A triaxial kit is available including three ARS-09 sensors and a triaxial mounting block, which becomes a 6 degree-of-freedom measurement system with 3 optional linear accelerometers added to its mounting surfaces.

Custom scale factors and ranges are available.

The ARS-09 has an integral cable for direct connection to power and data analysis systems. For use with the optional ILC units, specify the ARS-09A. Refer to the Product Order Guide for ILC compatibility.

Automobile Motion Testing

Platform Stabilization

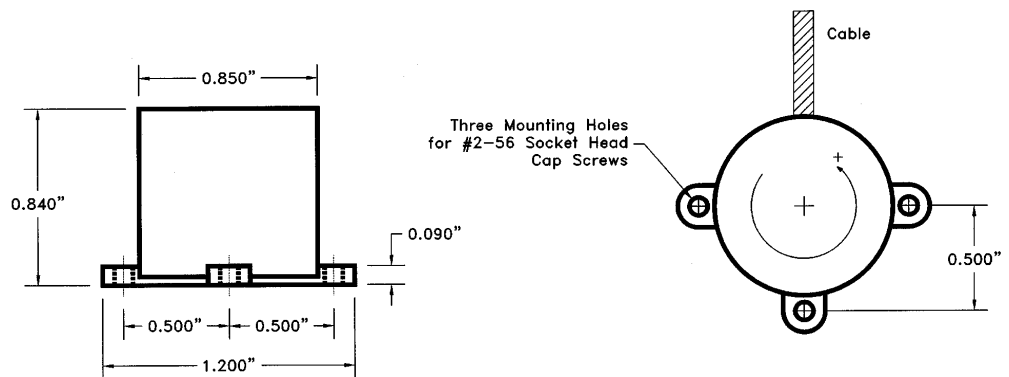
Crash Testing

Aircraft Ejection Testing

Modal Analysis

Aerospace Controls

Machinery Monitoring



ATA *Sensors*

"Sensing ways to make the world better."

4500 Anaheim Ave. NE, Suite B-6, Albuquerque, New Mexico 87113 USA - www.atasensors.com
Tel: 505-823-1320 Fax: 505-823-1560

Specifications

ATA Sensors' patented MHD angular motion sensors utilize the finest materials and workmanship combined in durable packages that feature:

- No moving parts
- Dynamic range > 100dB
- Low power consumption
- Low cross axis angular sensitivity
- Low linear acceleration sensitivity
- Integral electronics / low noise
- High survivable shock limits
- Superior applications support
- One-year warranty against defects in materials and workmanship on sensors, 90 days on cables.

All data is believed correct at time of publication. Specifications are subject to change without notice.
ARS-09ds/8.98

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Dynamic

ARS-09 Range ¹	±1.75 radian/sec (±100 degree/sec)
Sensitivity ²	5,700 mV/radian/sec (100 mV/degree/sec)
Bandwidth	0.3 to 1000 Hz
Cross-axis Angular Error	< 2%
Linear Acceleration Sensitivity	< 0.009 radians/sec/g (<0.5 degree/sec/g)
Voltage Noise PSD ³	1.1 x 10 ⁻⁶ V ² /Hz
Noise Equivalent Angle	< 80 microradians (rms)
Non-linearity	< 0.1%
Temperature Coefficient ⁴	< 0.1% Scale Factor / °C

Electrical

ARS-01 Excitation Voltage	±5.0 to ±15.0 Vdc
Power Dissipation	< 0.3 Watts
Output Impedence	< 100 Ohms
Grounding ⁵	Case (isolated from printed circuit board mounting flange)
Cable	Integral, internal connection

Mechanical

Diameter	20.3 mm (0.8 inches)
Height	20.3 mm (0.8 inches)
Weight	46 gm (1.6 oz.)
Case material	Stainless Steel 430/Epoxy
Mounting	#2-56 x 1/4 (3)

Environmental

Temperature - operating	-35 to +60°C (-31 to +140°F)
Temperature - non-operating	-35 to 100°C (-31 to +212°F)
Humidity	Unaffected - Epoxy sealed unit
Linear Acceleration ⁶ , Max operating	200 g any axis
Linear Acceleration ⁶ , Max survivable	200 g any axis

Notes:

1. Peak-to-peak @ ±15Vdc dual power supply
2. Measured @ 10 Hz
3. Power spectral density flat to angular velocity over specified bandwidth.
4. Percent change in Scale Factor per °C @ 100 Hz
5. Signal return connected to circular case (isolated from printed circuit board mounting flange) Do not ground case to mounting fixture to avoid ground loops.
6. Peak, 100Hz half sine

